



Clear SOLUTION

Learn how a wastewater treatment plant slashed engineering time by 50% and improved its regulatory compliance by using integrated control.



When the leaders at St. Joseph Sanitary District No. 1, near La Crosse, Wis., decided to build a new wastewater treatment plant, they wanted to make sure it would meet tighter water-quality permit requirements. ITT-Sanitaire worked with the district's consulting engineer to integrate the control system. The new plant helps the district meet water-quality standards as well as provide a 50% savings on engineering costs by using the Allen-Bradley® CompactLogix™ controller.

ITT-Sanitaire, Brown Deer, Wis., designs and builds biological process equipment that treats wastewater and turns it into clean water, helping customers to automate their wastewater treatment plants.

Plants typically have three treatment processes: primary treatment with headworks, secondary with activated sludge and solids removal, and tertiary with effluent polishing and disinfection. ITT-Sanitaire provides the biological treatment for the secondary treatment step with the Austgen Biojet (ABJ®) biological process system. This system is optimized by the measurement of flow, dissolved oxygen levels and suspended solids concentrations within the wastewater.

Engineers can design the process to accomplish treatment to high-quality effluent requirements, including biochemical oxygen demand (BOD)/total suspended solids (TSS) of 10/10 mg/L or less, total nitrogen (TN) to 4 mg/L or less, and total phosphorus (TP) of 1.0 mg/L or less.

St. Joseph Sanitary District No. 1 operated a wastewater treatment plant that served about 1,000 residents of nearby St. Joseph. The obsolete treatment facility wasn't consistently meeting the Wisconsin Department of Natural Resources' mandated, effluent, water-quality levels included in the plant's permit requirements. Because the area's population had grown, the sanitary district and its consulting engineer decided to build a new facility to meet tighter permit requirements. ITT-Sanitaire asked Rockwell Automation to work with them to provide a solution.

Standardized Solution the Clear Winner
ITT-Sanitaire's design included Rockwell Automation programmable automation controllers (PAC), Allen-Bradley® CENTERLINE® 2100 Motor Control Centers (MCC), Allen-Bradley PowerFlex® 700 AC drives (www.rockwellautomation.com/go/tjpf700), Allen-Bradley PanelView™ Plus HMI terminals, and a FactoryTalk® View supervisory control and data acquisition (SCADA) system (www.rockwellautomation.com/go/tj10ft).



Left: A SCADA system visualizes process data from a plant basin on an operator's desktop PC. **Below:** ITT-Sanitaire automated the St. Joseph Sanitary District's wastewater treatment plant by installing control panels with CompactLogix PACs. The RSLogix 5000 programming software helped cut installation time in half.



“By standardizing on Rockwell Automation controls, we helped eliminate the compatibility problems you often get from using multiple vendors,” says Jeff Jasinski, engineering manager-ABJ for ITT-Sanitaire.

The Allen-Bradley CompactLogix PAC from Rockwell Automation manages the entire wastewater treatment process. The PAC is part of the Rockwell Automation Logix controller family. It shares a common control engine, networking technology and communications services. The controller gathers data from sensors within the St. Joseph municipality and activates the necessary equipment for a streamlined operation sequence.

ITT-Sanitaire's engineers developed and reused a library of code through the add-on instruction (AOI) function of Rockwell Software® RSLogix™ 5000 programming software (www.rockwellautomation.com/go/tjrsl). The library maintains logic blocks for each device, so the engineer

that present log and trend information on critical functions such as flow and dissolved oxygen levels. Operators view screens on FactoryTalk View HMI and the PanelView Plus HMI (www.rockwellautomation.com/go/tj10pp).

ITT-Sanitaire connected the CompactLogix PAC to the PanelView Plus HMI terminals and the plant's FactoryTalk View SCADA system via EtherNet/IP™, allowing all three to share data. The EtherNet/IP network

uses standard, unmodified Ethernet so St. Joseph's operators can remotely monitor operation status at any time using standard tools.

The CENTERLINE 2100 MCCs (www.rockwellautomation.com/go/tjmcc) manage the plant's motor functions. They help reduce wiring time because operators can plug and unplug starters and other motor control components as needed. Engineers also can hardwire the MCCs to plant equipment for centralized, intelligent motor control.

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— Jeff Jasinski, Engineering Manager-ABJ, ITT-Sanitaire

only needs to determine how the device will work for the particular project. He can then select the correct logic block to import into the program.

Since the logic blocks integrate seamlessly with each other, engineers only need to import the proper function for each device and the software does the rest, resulting in a fully tested and field-proven RSLogix 5000 program.

ITT-Sanitaire has an extensive library of graphical standards based on the FactoryTalk View HMI software platform

A Huge Difference

A project like the St. Joseph wastewater treatment plant would typically take about 150 hours of engineering. ITT-Sanitaire has estimated a 50% savings on engineering costs by using the CompactLogix controller and programming software. “The CompactLogix system is an amazing product,” says Jasinski. “I fail to realize why more in the industry do not use it.”

Since completing the installation in January 2007, the wastewater treatment plant has been exceeding effluent water-quality standards. The plant is operating well within state-regulated discharge permit requirements, and currently produces effluent values in the single digits.

“The unique thing about Rockwell Automation is that the company is always forward-thinking in the solutions it delivers,” says Jasinski. “The company manufactures products so that you can migrate to the next generation of equipment, in addition to servicing legacy products, without any hassle.” □

Allen-Bradley PACs

www.rockwellautomation.com/go/tj10pac